

CLAIMS

What is claimed is:

1. A system for polishing a substrate in fabricating semiconductor devices, said system comprising:

at least two different types of polishing module arranging in an arbitrary sequence beginning with a first polishing module and ending with a last polishing module;

means for transferring said substrate between said polishing modules;

an unload station for unloading said substrate from said transferring means after ending polishing at said last polishing module; and

a load station for loading said transferring means with said substrate prior to starting polishing at said first polishing module.

2. The system according to claim 1, wherein said polishing modules comprise:
a polishing surface;
a movable substrate carrier for holding said substrate being positionable over said polishing surface, wherein at least one of said polishing surface and said substrate carrier moves with respect to the other to impart relative motion between said substrate and said polishing surface; and
a liquid solution dispenser for dispensing a polishing solution on said polishing surface.
3. The system according to claim 1, wherein said transferring means comprises a plurality of carrier heads for holding said substrate.
4. The system according to claim 1, wherein said polishing modules comprises a rotary chemical mechanical polishing, and an orbital chemical mechanical polisher.
5. The system according to claim 1, further comprising a controlling for controlling movements of said transferring means.
6. The system according to claim 1, further comprising a cleaner for cleaning said substrate.
7. The system according to claim 1, wherein one of said polishing module comprises a cleaner for cleaning said substrate.

8. A method for planarizing a substrate by using a polishing system in fabricating semiconductor devices, wherein said system comprises at least two different types of polishing module, means for transferring said substrate, a load station, and an unload station, wherein said modules are arranged in an arbitrary sequence beginning with a first polishing module and ending with a last polishing module, said method comprising:

loading said transferring means with said substrate at said load station;

sequentially polishing and transferring said substrate in a sequence from said first polishing module to said last polishing module; and

unloading said substrate from said transferring means at said unload station after ending polishing at said last polishing module.

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9. The method according to claim 8, wherein said polishing modules comprises a rotary chemical mechanical polisher, and an orbital chemical mechanical polisher.

10. The method according to claim 9, wherein said step of sequentially polishing and transferring said substrate comprises:

transferring said substrate to said rotary chemical mechanical polisher;

polishing said substrate at said rotary chemical mechanical polisher to reach a first stage;

transferring said substrate to said orbital chemical mechanical polisher after said first stage is reached;

polishing said substrate at said orbital chemical mechanical polisher to reach a second stage; and

transferring said substrate to said unload station after said second stage is reached.

11. The method according to claim 8, wherein said polishing system further comprises a cleaner for cleaning said substrate.

12. The method according to claim 11, further comprises a step of cleaning said substrate at said cleaner.

13. The method according to claim 8, wherein one of said polishing modules comprises a cleaner for cleaning said substrate.

14. A method for planarizing a substrate by using a polishing system in fabricating semiconductor devices, wherein said system comprises a first polishing module, a second polishing module, means for transferring said substrate, a load station, and an unload station, wherein said first polishing modules and said second polishing module are arranged in a sequence beginning with said first polishing module and ending with said second polishing module, said method comprising:

loading said transferring means with said substrate at said load station;

sequentially polishing and transferring said substrate in a sequence from said first polishing module to said second polishing module; and

unloading substrate from said transferring means at said unload station after ending polishing at said second polishing module.

15. The method according to claim 14, wherein said first polishing module is selected from the group consisting of a rotary type, an orbital type, a fixed-abrasive type, and a linear type chemical mechanical polishers.

16. The method according to claim 14, wherein said second polishing module is selected from the group consisting of a rotary type, an orbital type, a fixed-abrasive type, and a linear type chemical mechanical polishers.

17. The method according to claim 14, wherein said step of sequentially polishing and transferring said substrate comprises:

transferring said substrate to said first polishing module;

polishing said substrate at said first polishing module to reach a first stage;

transferring said substrate to said second polishing module after said first stage is reached;

polishing said substrate at said second polishing module to reach a second stage; and

transferring said substrate to said unload station after said second stage is reached.

18. The method according to claim 14, wherein said polishing system comprises a cleaner for cleaning said substrate.

19. The method according to claim 18, further comprising a step of cleaning said substrate at said cleaner.

20. The method according to claim 14, wherein said second polishing module comprises a cleaner for cleaning said substrate.